

Fall 2026
Fundamentals of Fire Safety
Department of Civil and Environmental Engineering
CIVE5609 / IPIS5504 [0.5 Credit] – Section A

Teaching Team

Instructor:

Dr. Mohamed Beshir

mohamedbeshir@cunet.carleton.ca

Office: Mackenzie – EDC building, Office 4531

Office hours: To be announced on Brightspace

TA(s): N/A

Note: Email is the preferred way of communication outside classes and office hours. Carleton email accounts must be used for all correspondence related to the course. Please include “CIVE5609_Fall26” in the subject line of your email.

Course Description and Requirements

1) Course schedule

Lectures: Tuesdays 6:05 PM – 8:55 PM, [REDACTED]

First class: September 15, 2026. No class on October 27, 2026 (Fall Break).

*Please refer to the [Public Class Schedule](#) for the most recent information.

2) Course description

This course introduces the core principles and practices of fire safety, with a focus on their application in the built environment and broader society. Students will examine the scope of the fire problem and its impacts on people, property, the economy, and the environment. Topics include heat transfer and fire dynamics, smoke management, fire suppression, human behaviour in fire, building codes, the response of structures to fire, and fire safety in heritage buildings. The course also includes a hands-on laboratory session illustrating fundamental fire phenomena.

The course consists of three hours of lectures per week, supplemented by activities assigned by the instructor. Delivery will be in person and will feature guest lectures from national and international experts in the field.

3) Learning Outcomes

Upon successful completion of this course, students will be able to:

- Describe the scope of the fire problem and its impacts on people, property, the economy, and the environment.
- Apply the fundamentals of heat transfer and fire dynamics to estimate fire growth, heat release, and compartment fire behaviour.
- Explain the principles of smoke movement and management, and of fire detection and suppression systems in buildings.

- Analyze human behaviour in fire and its implications for evacuation and fire safety design.
- Interpret the fire safety provisions of building codes in both prescriptive and performance-based contexts.
- Evaluate the response of structural elements and heritage buildings to fire and identify appropriate protection strategies.
- Communicate technical fire safety concepts effectively through a group presentation.

4) Text book(s)/Learning Materials

Students are not required to purchase textbooks or other learning materials for this course. All lecture material will be posted on Brightspace. The following optional reference texts may be consulted for additional depth:

- Dougal Drysdale, An Introduction to Fire Dynamics, 3rd ed., Wiley
- SFPE Handbook of Fire Protection Engineering, 5th ed., Springer
- Richard L.P. Custer and Brian J. Meacham, Introduction to Performance-Based Fire Safety, NFPA/SFPE
- SFPE Engineering Guide to Performance-Based Fire Protection Design
- Andrew H. Buchanan and Anthony K. Abu, Structural Design for Fire Safety, 2nd ed., Wiley

5) Topics and tentative plan

Schedule is subject to change. Quiz dates and the presentation date are tentative. The exact date and time of the final examination will be set by Examination Services.

Date	Session	Topic / Activity
Sept. 15	Week 1	Introduction Session
Sept. 22	Week 2	Heat Transfer
Sept. 29	Week 3	Fire Dynamics
Oct. 6	Week 4	Smoke Management
Oct. 13	Week 5	Fire Suppression
Oct. 20	Week 6	Human Behaviour in Fire I
Oct. 27	—	No class (Fall Break)
Nov. 3	Week 7	Human Behaviour in Fire II + Quiz 1
Nov. 10	Week 8	Building Codes
Nov. 17	Week 9	Fire in Heritage Buildings
Nov. 24	Week 10	Fire and Structures
Dec. 1	Week 11	Lab Session + Quiz 2
Dec. 8	Week 12	Group Presentations

6) Evaluation and marking scheme

The final grade will be determined from the following components:

Component	Date (tentative)	Weight
Quiz 1 (in class, individual)	November 3, 2026	20%
Quiz 2 (in class, individual)	December 1, 2026	20%
Group Presentation	December 8, 2026	30%
Final Examination	Set by Examination Services	30%
Total		100%

a) **Final Examination**

i) **Final exams are for evaluation purposes and will not be returned to students.**

ii) Exam conditions: The final examination will be written on campus and proctored. Calculators are allowed. Further exam conditions will be announced in class and posted on Brightspace.

iii) Final Exam Weight: 30% of the final grade.

iv) Deferred Final Examinations: Students who are unable to write the final examination because of extenuating circumstances, as defined in the [Academic Consideration Policy](#), may apply for accommodation by contacting the Registrar's office. Consult [Section 4.3 of the University Calendar](#).

b) **Exam format and e-proctoring statement**

The final examination is an in-person, paper-based examination written on campus. E-proctoring will not be used in this course.

c) **Quizzes and Group Presentation**

Two in-class quizzes, each worth 20% of the final grade, will be held on November 3 and December 1, 2026 (tentative). Each quiz covers the material presented up to the week before the quiz. The group presentation (30%) will take place on December 8, 2026 (tentative); topics, group assignments, and the marking rubric will be posted on Brightspace.

d) **Additional requirements**

There are no additional requirements beyond the cumulative grade earned in the course.

e) **Term work late submission policy**

Late submissions will be considered on a case-by-case basis and must be discussed with the course instructor. Please note that approval for late submissions will only be granted under exceptional circumstances.

f) **Deferred term work and self declaration**

Students who claim extenuating circumstances defined in the [Academic Consideration Policy](#), as a reason for missed term work (including missed quizzes) are held responsible for immediately informing the instructor concerned and for making alternate arrangements with the instructor and in all cases. This must occur no later than three (3) days after the term work was due. The alternate arrangement must be made before the last day of classes in the term as published in the academic schedule. Consult [Section 4.4 of the University Calendar](#).

7) Academic dates

Students should be aware of the academic dates (e.g. last day for academic withdrawal) posted on the Registrar's office web site <https://carleton.ca/registrar/registration/dates/academic-dates/> or the [Calendar website](#).

Academic Integrity and Plagiarism

- a) Please consult the Faculty of Engineering and Design information page about the Academic Integrity policy and our procedures: <https://carleton.ca/engineering-design/current-students/fed-academic-integrity>. Violations of the Academic Integrity Policy will result in the assignment of a penalty such as reduced grades, the assignment of an F in a course, a suspension or, expulsion.
- b) One of the main objectives of the Academic Integrity Policy is to ensure that **the work you submit is your own**. As a result, it is important to write your own solutions when studying and preparing with other students and to avoid plagiarism in your submissions. The University Academic Integrity Policy defines plagiarism as “presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.” This includes reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source.

Examples of violations of the policy include, but are not limited to:

- any submission prepared in whole or in part, by someone else;
- using another’s data or research findings without appropriate acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
- failing to acknowledge sources of information through the use of proper citations when using another’s work and/or failing to use quotation marks.

Unauthorized Dissemination

As per Carleton’s [Academic Integrity Policy](#), Unauthorized Dissemination is a violation of the standards of academic integrity to publish, disseminate, or otherwise make available to a third-party instructional material where the instructor has explicitly prohibited their dissemination.

The materials (including the course outline, slides, posted notes, videos, labs, projects, assignments, quizzes, exams, and solutions) created for this course are intended for personal use only. They may not be reproduced, redistributed, or disseminated in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without written permission from the author(s), both during and after the semester.

Generative Artificial Intelligence (GenAI)

Permitted use: Generative AI tools (e.g., ChatGPT, Copilot, Claude) may be used in this course to improve the writing quality and organization of your own work, and to check or validate — and **only validate** — answers you have already produced yourself. For example, you may ask a GenAI tool to proofread a paragraph you wrote or to explain a concept covered in lecture.

Not permitted: Generating entire parts of your work (calculations, analyses, presentation content, or written sections) through GenAI tools and submitting it as your own is prohibited and will be penalized under the Academic Integrity Policy. GenAI tools are not permitted during quizzes or the final examination.

Documentation: Where GenAI is used for permitted purposes in submitted work, include a brief statement identifying the tool and how it was used.

Rationale: The learning outcomes of this course depend on you developing your own understanding of fire safety principles and your own engineering judgement. GenAI is best used to support, not replace, that process.

As our understanding of the uses of GenAI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of GenAI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

Safer Learning and Working Environment

Carleton University and all members of the University community share responsibility for ensuring that the University's educational, work and living environments are free from discrimination and harassment. Should you have concerns about harassment or discrimination relating to your age, ancestry, citizenship, colour, creed (religion), disability, ethnic origin, family status, gender expression, gender identity, marital status, place of origin, race, sex (including pregnancy), or sexual orientation, please contact the [Department of Equity and Inclusive Communities](mailto:equity@carleton.ca) at equity@carleton.ca, [Ombuds Services - Carleton University](#) or submit an anonymous human rights concern through [this form](#).

Academic Accommodations

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances, are outlined on the Academic Accommodations website (students.carleton.ca/course-outline).

Engineering Academic Advising

[The Engineering Academic Support Service](#) assists undergraduate engineering students with course selection, registration, and learning support from first-year through to graduation.

Academic Advisors Contact can be found here: <https://carleton.ca/engineering-design/current-students/undergrad-academic-support/undergraduate-advisors/>.

Student Mental Health and Wellness

As a university student you may experience a range of mental health challenges that can significantly impact your academic success and overall well-being. Carleton's [Wellness Services Navigator](#) is designed to help students connect with mental health and wellness resources.

If you need to talk to someone from the department for more information and support with connecting to resources, you can contact the following faculty members, depending on your program. Or contact the department.

Department: CEEUGChair@cunet.carleton.ca — Prof. Shoeleh Shams, Email: shoelehshams@cunet.carleton.ca, Office: 4242 Mackenzie

ACSE: Prof. Cara Lozinsky — Email: caralozinsky@cunet.carleton.ca, Office: 2374 Mackenzie

CIVE: Prof. Christian Viau — Email: Christian.Viau@carleton.ca, Office: 4535 Mackenzie

ENVE: Prof. Cole Van De Ven — Email: cole.vandeven@carleton.ca, Office: 6210 Canal Building

Here is a list of on-campus and off-campus resources:

1. [Emergencies and Crisis](#)
2. **Carleton's Wellness Desk:** Located at 204A MacOdrum Library, is a space for students to learn about resources, connect with our Wellness Coordinator, and decompress during stressful times of the year. You can pop into the Wellness Desk any time during its hours of operation – no appointments necessary! <https://wellness.carleton.ca/mental-health/wellness-desk/>
3. **Carleton's Care and Support Team:** The role of a Care and Support Team is to support students with any questions or concerns they may have relating to their academics, well-being, finances or any other challenges they may be experiencing. <https://wellness.carleton.ca/mental-health/student-care-and-support-team/>
4. **Carleton's Health and Counselling Services:** To book an appointment visit the [CHR Connect App](#) or contact the main clinic by calling 613-520-6674 ext. 2. If urgent, let the Patient Care Coordinator know or go in person to the main clinic (2500 Carleton Technology and Training Centre Building) and indicate that they are in crisis and need to speak to someone right away. <https://wellness.carleton.ca/counselling/>
5. **Carleton's Single Session Counselling:** To book an appointment visit the CHR Connect App. <https://thconnect.telushealth.com/mobile-app-information/xz6lzGrv>
6. **Residence Counselling and Wellness Service:** Counselling services specifically for students in residence. To book an appointment call 613-520-2600 ext. 8061. <https://carleton.ca/health/residence-counselling/>
7. **Carleton's Therapy Dogs:** Carleton's therapy dogs are around campus with their owners (who are Carleton University staff and faculty) to comfort and provide support to help you thrive as a university student. <https://wellness.carleton.ca/mental-health/therapy-dogs/>
8. **Good2Talk (1-866-925-5454):** Good2Talk is a free, confidential helpline providing professional counselling and information and referrals for mental health, addictions and well-being to post-secondary students in Ontario, 24/7/365. <https://good2talk.ca/>
9. **The Walk-In Counselling Clinic (off-campus community resource):** The Walk-in Counselling Clinic has offices in various locations across Ottawa and the greater Champlain region that are open 7 days a week. Individuals will be assisted, with no appointment, on a first-come, first-serve basis during the Walk-in Counselling Clinic hours. The Walk-in Counselling Clinic **offers services in many languages** and is free and confidential. More information can be found at: <https://walkincounselling.com/>

10. **Distress Centre of Ottawa and Region:** Available 10am-11pm, 7 days/week, 365 days/year. **Distress Line:** 613-238-3311, **Crisis Line:** 613-722-6914 or 1-866-996-0991, **Text:** 343-306-5550. <https://www.dcottawa.on.ca/>
11. **Distress and Crisis Ontario,** Available for chat 2 pm – 2 am EST. <https://www.dontario.org/>
12. **BounceBack Ontario (Toll-Free: 1-866-345-0224)** is a free skill-building program managed by the Canadian Mental Health Association (CMHA). It is designed to help adults and youth 15+ manage low mood, mild to moderate depression and anxiety, stress or worry. Delivered over the phone with a coach and through online videos, you will get access to tools that will support you on your path to mental wellness. <https://bouncebackontario.ca/>